REMARKS

A. Status of the Application

Claims 1-13 remain pending. No amendments are presented in this paper. No new matter was introduced.

B. Section 101 Rejections

Claims 1 through 13 stand rejected under 35 U.S.C. § 101 for allegedly lacking patentable utility. Applicants respectfully traverse.

The Manual of Patent Examining Procedure sets forth the guidelines for compliance with the utility requirement of 35 U.S.C. § 101 in MPEP § 706.3(a)(1). Subsection (B)(1) makes it clear that an invention has utility if a particular purpose (*i.e.* "specific utility") is asserted by the Specification and a person of ordinary skill would consider this assertion credible.

The Office contends that the disclosed utility is allegedly not applicable to the pending claims, and in particular, the applications related to identifying molecular pathways or classifying disease phenotypes described on page 20 of the Specification. *See* page 2 of the Office Action mailed 11/2/05. *See* page 3 of the Office Action mailed 11/2/05.

The Office further states that one of ordinary skill in the art "must be aware of the correlation between the information received and a condition to be diagnosed." *See* page 2 of the Office Action mailed 11/2/05. Thus, the Office concludes that "absent any disclosure for what the classified gene expression represents and/or a correlation between the signal 'received' and a disease to be diagnosed, the asserted utility is not specific." *See* page 3 of the Office Action mailed 11/2/05. Applicants respectfully traverse.

1. The Disclosed Utilities are Applicable to the Pending Claims

Independent claim 1 recites, in part:

> collecting a plurality of expression profiles of a control group and a plurality of expression profiles of an experiment group...
>
> identifying a group of similarly expressed genes, defining a reference group, determined from the plurality of expression profiles of the control group;
>
> identifying a plurality of differentially expressed genes in the plurality of expression profiles of the experimental group based on the reference

group, wherein identifying the plurality of differentially expressed genes comprises utilizing a paired T-test and an associative T-test; and

classifying the differentially expressed genes as (a) likely false positive, (b) real positives, or (c) potential positives using the paired T-test and associate T-test.

Independent claim 13 recites a similar limitation. Applicants submit that these claims are applicable to the disclosed applications discussed on pages 9-13 and page 20 of the Specification, contrary to the position take by the Office. For instance, referring to page 14 and Table 1 of the Specification, classifying disease subphenotypes are disclosed. The Specification states that of the genes that are identified and are differentially expressed between normal (*e.g.,* control group) and dwarf mice (*e.g.,* experiment group), "71 are previously reported as differentially expressed in Snell dwarf mice, associated with dwarfism, or strongly associated with a similar hormonal status." (Page 14, lines 4-6).

Moreover, Applicants submit that the data sets listed on page 20 of the Specification are a mere example and that there are other uses for the invention, including the methods outlined and described on pages 9-13, as will be recognized by one having ordinary skill in the art. *See* page 20, lines 20-21.

2. *The Asserted Utility is Specific*

Applicants submit that the Office's contention that a correlation between the information received and a condition to be diagnosed must be disclosed is erroneous. One of ordinary skill in the art can recognize that a particular interest, whether it is identifying differential expressed genes, identifying molecular pathways, classifying disease subphenotypes, *etc.,* is known at the time a control group and an experimental group is selected. Referring to, for example, the Specification, at page 14, lines 1-12 and Table 2 discloses that the method outlined on pages 9-13 was used to "identify genes that are differentially expressed between normal and dwarf mice." One of ordinary skill in the art can recognize that in selecting the normal mice (*e.g,* a control group) and the dwarf mice (*e.g.,* an experiment group), the specific utility can be to "identify a plurality of differentially expressed genes in the plurality of expression profiles of the experimental group," as recited in claims 1 and 13. The Specification discloses that the method "was able to more correctly predict the expression levels of 11 genes verified by the RT-PCR."

(Page 14, lines 11-22). Thus, a non-limiting example of a specific utility asserted by the application is a method to accurately classify differential expressed genes. A person of ordinary skill would find this a credible assertion.

It is noted that a Specification that contains disclosure of a utility that corresponds in scope to the subject matter sought to be patented must be taken as sufficient to satisfy the utility requirements of § 101 for the entire claimed subject matter unless there is reason for one of skilled in the art to question the objective truth of the statement of utility or its scope. *Ex parte Rubin,* 5 U.S.P.Q.2d 1461 (B.P.A.I 1987).

Based on the arguments presented above and the guidelines provided by MPEP § 2107.01-2107.03 for governing utility rejections, the § 101 rejection is improper. Applicants respectfully request the removal of the § 101 to all the pending claims.

C. Section 112 Rejection

Claims 1-13 stand rejected under 35 U.S.C. § 112, second paragraph for allegedly being indefinite for failing to point out and distinctly claim the subject matter. The Office states it is unclear whether an element of claim 1 recites positive method steps. *See* page 3 of the Office Action mailed 11/2/05. Applicants respectfully traverse.

Independent claim 1, recites in part, the positive step of "adjusting the plurality of expression profiles of the control group control group and the plurality of expression profiles of the experimental group to identify outliers and to re-scale to an averaged profile of the control group." That positive step is explicitly discussed, for example, at page 9, line 21 through page 10, line 3 of the Specification, which discloses:

> The normalized profiles may then be adjusted relative to each other by robust regression analysis of genes expressed above background. In this analysis, potential outliers are identified and their contribution to the calculations down-weighted in an iterative manner, diminishing or excluding their influence (**FIG. 2**). Expression profiles of both control and experimental groups are then re-scaled to a common standard – the averaged profile of the control group.

For at least the above reasons, claim 1 complies with Section 112, and all its dependent claims are believed to be proper as well. Applicants submit that the rejection to claim 13 is erroneous, as claim 13 is an independent claim and does not depend from claim 1 as suggested

by the Office. *See* page 3 of the Office Action mailed 11/2/05. Applicants respectfully request removal of this rejection.

D. Section 102 Rejection

Claims 1 and 3-13 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by the Dozmorov *et al.* publication entitled "Neurokinin 1 Receptors and Neprilysin Modulation of Mouse Bladder Gene Regulation," first published December 19, 2002. Applicants respectfully traverse.

The pending application properly claims priority to U.S. Provisional Patent Application Serial No.: 60/420,286, which was filed October 24, 2002. *See* 37 C.F.R. § 1.53(c)(3). Because the Dozmorov publication was not published until after this date (December 19, 2002), it is not prior art against the claims.

Thus, in light of the foregoing comments, Applicants respectfully request the withdrawal of all the § 102 rejections to claims 1 and 3-13.

E. Section 103 Rejection

1. Claims 1-4, 8-9, and 12 are Patentably Distinct

Claims 1-4, 8-9, and 12 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Dozmorov publication in view of U.S. Publication No.: 2002/0072484 to Alters *et al.* Applicants respectfully traverse.

As noted above, the Dozmorov publication is not prior art. The Alters reference does not teach or suggest all the elements of independent claim 1. For example, Alters is silent to any teachings or suggestions for, *e.g.*, classifying the differentially expressed genes as (a) likely false positive, (b) real positives, or (c) potential positives using the paired T-test and associate T-test, as recited in claim 1. Alters generally provides techniques for administering a drug to a subject, measuring a value of a biomarker, and comparing the measured value to a standard level. *See* Summary of the Invention, particularly [0015] and [0016]. Depending on the difference between the measured value of the inventive biological markers and the standard level, the effectiveness of the drug is analyzed. *See id.* Alters lacks any disclosure for classifying differential expressed genes, among other differences.

For at least the above reasons, independent claim 1 and its respective dependent claims are patentably distinct over the Alters reference. Applicants respectfully request the withdrawal of the § 103 rejection to claims 1-4, 8-9, and 12.

2. Claims 5-7 are Patentably Distinct

Claims 5 through 7 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Dozmorov publication in view of the Alters reference in further view of the Thomas Wu publication entitled "Analysing Gene Expression Data from DNA Microarrays to Identify Candidate Genes." Applicants respectfully traverse.

As noted above, the Dozmorov publication is not prior art, and the Alters reference fails to teach the or suggest the elements of independent claim 1. Similarly, the Wu publication is silent to any teachings or suggestions for, *e.g.*, classifying the differentially expressed genes as (a) likely false positive, (b) real positives, or (c) potential positives using the paired T-test and associate T-test, as recited in claim 1.

The Wu reference discloses surveys of analytical methods for gene-filtering tasks. *See* Abstract. In one respect, Wu discloses ranking genes based on their similarity to a given expression profile by "categorizing genes into two groups: those that are similar and those that are dissimilar to a given profile." *See* ¶1 of the section entitled "Supervised pattern recognition." Among other differences, this technique cannot be construed as classifying the differentially expressed genes as (a) likely false positive, (b) real positives, or (c) potential positives using the paired T-test and associate T-test, as recited in claim 1.

Therefore, the Wu publication and the Alters reference, either separately or combined, do not teach or suggest all the elements of claim 1. Claims 5-7 are dependent claims of claim 1 and are patentably distinct over Wu and/or Alters for at least the same reasons. Applicants respectfully request the removal of the § 103 rejections.

CONCLUSION

Applicants believe that these remarks fully respond to all outstanding matters for this application. Applicants respectfully request that the rejections of all claims be withdrawn so the claims may swiftly pass to issuance.

Should the Examiner desire to sustain any of the rejections discussed in this Response, the courtesy of a telephone conference between the Examiner, the Examiner's supervisor, and the undersigned attorney at 512-536-3018 is respectfully requested in advance.

Respectfully submitted,

Michael C. Barrett
Reg. No. 44,523
Attorney for Applicants

FULBRIGHT & JAWORSKI L.L.P.
600 Congress Avenue, Suite 2400
Austin, Texas 78701
Telephone: (512) 474-5201
Facsimile: (512) 536-4598

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